Department of Defense

DIRECTIVE

NUMBER 6050.4

March 16, 1982

ASD(MRA&L)

SUBJECT: Marine Sanitation Devices for Vessels Owned or Operated by the Department of Defense

References: (a) DoD Directive 6050.4, subject as above, October 23, 1979 (hereby canceled)
(b) Public Law 92-500, "Federal Water Pollution Control Act," October 18, 1972, as amended by Public Law 95-217, "Clean Water Act," December 27, 1977, as amended
(c) Environmental Protection Agency "Marine Sanitation Device Standard," January 29, 1976 (40 CFR 140)
(d) Department of Transportation (DoT), U.S. Coast Guard (USCG) Directives, "Marine Sanitation Devices" (33 CFR 159)
(e) through (g), see enclosure 1

1. REISSUANCE AND PURPOSE

This Directive reissues reference (a) and implements Section 312 of reference (b) to update policy and procedures governing the design, construction, installation, and operation of marine sanitation devices (MSDs), and procedures for certifying that such devices are consistent with Environmental Protection Agency (EPA) standards prescribed in reference (c).

2. APPLICABILITY AND SCOPE

2.1. The provisions of this Directive apply to the Office of the Secretary of Defense, the Military Departments (including their reserve components), the Organization of the Joint Chiefs of Staff, the Unified and Specified Commands, and the Defense Agencies (hereafter referred to as "DoD Components").

2.2. The provisions encompass all DoD vessels within U.S. navigable waters, except those vessels without installed toilet facilities.

2.3. Pursuant to the authority vested in the Secretary of Defense under Section 312(d) of reference (b), it has been determined that, at certain times and under certain circumstances, compliance with this Directive for certain vessels would unduly and unreasonably detract from their military characteristics, effectiveness, and safety to such an extent as to be not in the interest of national security. Consequently, the following exceptions have been established:

2.3.1. Vessels and classes of vessels traveling U.S. navigable waters that are incapable of retaining total ship-generated sewage onboard for later discharge on the high seas or at pierside sewage collection facilities. Discharges into U.S. navigable waters shall be accomplished as far from land as possible and shall be minimized to the maximum extent possible.

2.3.2. All DoD vessels that are conducting or participating in military operations and exercises (including training and readiness exercises and operations) within U.S. navigable waters when retention of total ship-generated sewage onboard such vessels either would interfere with operational effectiveness or would pose a hazard to the well-being of crew members or other personnel aboard.

2.3.3. All DoD vessels anchored or moored within U.S. navigable waters when sewage reception facilities or services are not available, or when use of such services or facilities is not feasible because of foul weather, poor visibility, or unsafe environmental conditions, and when onboard retention of ship-generated sewage either would interfere with operational effectiveness or would be a hazard to the well-being of crew members or other personnel aboard. Commanding officers of DoD vessels exempted under this provision shall ensure that discharges of ship-generated sewage into U.S. navigable waters are minimized to the maximum extent possible.

2.3.4. All DoD vessels during periods when the MSD is inoperable because of equipment malfunction or equipment installation or repair and when a ship in an overhaul or repair status cannot operate the MSD because of interference with the overhaul or repair effort or because its operation would pose a hazard to the well-being of crew members or other personnel aboard. Commanding officers of DoD vessels exempted under this provision shall ensure that these periods are held to a minimum.

3. DEFINITIONS

The terms used in this Directive are defined in enclosure 2.

4. POLICY

4.1. It is the policy of the Department of Defense that MSDs shall be designed and operated to prevent the overboard discharge of untreated or inadequately treated sewage, or of any waste derived from sewage, into U.S. navigable waters except as provided in subsection 2.3., above.

4.2. Any existing vessel equipped with a Type-I MSD that was installed on or before April 1, 1979, is in compliance as long as the device remains satisfactorily operable.

4.3. All new vessels shall be equipped only with U.S. Coast Guard- or DoD Component-certified Type-II or Type-III MSDs.

4.4. Type-III-B MSDs that are DoD Component-designed and -installed shall be exempt from the approval and certification requirements outlined in enclosure 3.

4.5. In freshwater lakes, freshwater reservoirs, or other freshwater impoundments whose inlets or outlets prevent the ingress or egress of DoD-owned or -operated vessels, or in rivers incapable of interstate navigation, DoD vessels may not discharge any treated or untreated sewage. DoD vessels that operate in these waters shall be modified to preclude accidental discharge into such waters.

5. PROCEDURES

5.1. DoD Components shall use U.S. Coast Guard approval and certification requirements (see DoT, USCG Directives, reference (d)), or shall develop their own requirements in accordance with enclosure 3, which may be more stringent than Coast Guard requirements.

5.2. MSD manufacturers shall follow certification procedures outlined in enclosure 4.

5.3. DoD Components shall identify requirements prescribed in Office of Management and Budget (OMB) Circular No. A-106 (reference (e)). Funds shall be programmed and budgeted so that procurement and installation of approved MSDs can be accomplished expeditiously.

5.4. Requests for individual or class exemptions to this Directive, for reasons such as potential vessel inactivation, unique operating circumstances, or economic or physical incapabilities, shall be addressed to the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics).

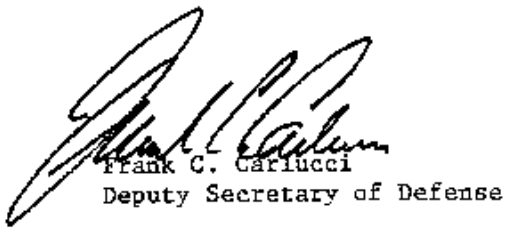
6. RESPONSIBILITIES

6.1. The Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) shall monitor compliance with the provisions of this Directive and shall approve or disapprove exemption requests.

6.2. Heads of DoD Components shall comply with the policy and procedures prescribed herein.

7. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Forward two copies of implementing documents to the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) within 120 days.



Frank C. Carlucci
Deputy Secretary of Defense

Enclosures - 4

1. References
2. Definitions
3. Approval and Certification Requirements
4. Certification Procedures

E1. ENCLOSURE 1

REFERENCES, continued

(e) OMB Circular No. A-106, "Reporting Requirements in Connection with the Prevention, Control, and Abatement of Environmental Pollution at Existing Federal Facilities," December 31, 1974

(f) Military Specification MIL-S-901C, January 15, 1963

(g) Standard Methods for the Examination of Water and Wastewaters, 13 ed., 1971[1]

[1]Available from the American Public Health Association, 1015 18th Street, N.W., Washington, D.C. 20036.

E2. ENCLOSURE 2

DEFINITIONS

E2.1.1. Discharge. Includes spilling, leaking, pumping, pouring, emitting, emptying, and dumping.

E2.1.2. DoD Vessels. Ships, boats, and other watercraft, including those used in civil works activities of the U.S. Army Corps of Engineers, owned or operated by DoD Components.

E2.1.3. Existing Vessel. A vessel on which construction was initiated before April 1, 1976.

E2.1.4. Failure. Any malfunction that causes an MSD to shut down or that, if not corrected, would preclude sewage processing or prevent the MSD from meeting the applicable performance requirements defined in paragraph E2.1.8., below. The term does not include failure of short duration, which can be corrected when the system is receiving sewage and before overboard discharge or shutdown.

E2.1.5. Fecal Coliform Bacteria. Organisms, associated with the intestines of warmblooded animals, that commonly are used as indicators of the presence of human fecal material and, thus, of disease in man.

E2.1.6. Flow-through MSD. An MSD that by design discharges treated sewage wastes overboard.

E2.1.7. Manufacturer. A person who manufactures, assembles, or imports MSDs for DoD vessels.

E2.1.8. Marine Sanitation Devices. Equipment installed in a vessel to receive, retain, treat, or discharge sewage; any process to treat such sewage. For the purposes of this Directive, four types of MSDs are defined:

E2.1.8.1. Type-I MSD. A DoD Component- or U.S. Coast Guard-certified flow-through device capable of producing an effluent with a fecal coliform bacterial count of not more than 1,000 per 100 milliliters and with no visible floating solids.

E2.1.8.2. Type-II MSD. A DoD Component- or U.S. Coast Guard-certified flow-through device capable of producing an effluent with a fecal coliform bacterial

count of not more than 200 per 100 milliliters and with a total suspended solids concentration of not more than 150 milligrams per liter.

E2.1.8.3. Type-III-A MSD. A nonflow-through device designed to treat and hold the treated sewage. This type includes reduced-flush devices that ultimately evaporate or incinerate the sewage to a sterile sludge or ash.

E2.1.8.4. Type-III-B MSD. A system consisting of drain piping, holding tanks, pumps, valves, connectors, and other equipment used to collect and hold ship-board sewage waste for later transfer to a shore sewage system or sewage barge, or for overboard discharge when in unrestricted waters. Also known as CHT (collection, holding, and transfer) system.

E2.1.9. New vessel. A vessel on which construction was initiated on or after April 1, 1976.

E2.1.10. Nonflow-through MSD. An MSD that holds untreated or treated sewage onboard for discharge in legally designated areas or in proper shore facilities.

E2.1.11. Sewage. Human body wastes and wastes from toilets or other receptacles intended to receive human body wastes.

E2.1.12. United States. Includes all states, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands.

E2.1.13. Visible Floating Solids. Sewage solids retained when samples of effluent are passed through a U.S. sieve No. 12 and exceed (by dry weight) 10 percent of the total suspended solids concentration of those samples.

E3. ENCLOSURE 3

APPROVAL AND CERTIFICATION REQUIREMENTS

E3.1.1. For approval and certification for DoD vessel use, Type-I, Type-II, and Type-III-A MSDs shall meet the following minimum requirements or the certification requirements of the U.S. Coast Guard (see DoT, USCG Directives, reference (d)):

E3.1.1.1. DESIGN AND CONSTRUCTION REQUIREMENTS

E3.1.1.1.1. The MSD shall be designed to process or retain sewage wastes for the maximum number of assigned personnel, including noncrew members.

E3.1.1.1.2. The MSD shall be capable of receiving wastes with freshwater, sea water, or some other form of transport medium, depending upon the system design.

E3.1.1.1.3. The MSD shall be designed and constructed to resist internal and external corrosion as found in a marine environment.

E3.1.1.1.4. The MSD shall be capable of intermittent operation of relatively short time intervals and shall be capable of being secured for long periods without disrupting the treatment system's efficiency and ability to activate.

E3.1.1.1.5. The MSD shall remain safe and sanitary, and may not create dangerous, offensive, or unsanitary conditions while secured or during operation.

E3.1.1.1.6. System components, such as valves, fittings, pumps, and motors, shall be standard items that are easy to maintain and replace.

E3.1.1.1.7. The MSD shall meet grade-B shock requirements, as prescribed in MIL-S-901C (reference (f)).

E3.1.1.1.8. The MSD shall be capable of satisfactory operation without discharge or creation of dangerous or unsanitary conditions under the following dynamic environmental circumstances:

E3.1.1.1.8.1. Maximum ambient temperature +60°C

E3.1.1.1.8.2. Minimum ambient temperature -40°C

E3.1.1.1.8.3. Permanent trim by the bow or stern up to 2° from the normal trim plane.

E3.1.1.1.8.4. Permanent list of 3° on either side of the vertical.

E3.1.1.1.8.5. Pitching 6° up or down from the horizontal plane, with a 6-second full period.

E3.1.1.1.8.6. Rolling 30° to either side of the vertical. Full roll period may be assumed as 10 seconds.

E3.1.1.1.9. The operation of the MSD shall be automatic and shall require a minimum of crew attention.

E3.1.1.2. RELIABILITY AND MAINTAINABILITY REQUIREMENTS

E3.1.1.2.1. A technical evaluation of the MSD shall be conducted at a land-based facility. The MSD then is installed on a DoD vessel for operational evaluation.

E3.1.1.2.1.1. Mean-Time-Between-Failure (MTBF). The MSD shall demonstrate a minimum MTBF of 500 hours at a 90 percent confidence level.

E3.1.1.2.1.2. Maximum-Time-To-Repair. The MSD shall demonstrate, at a 90 percent confidence level, that at least 95 percent of the repair time will be less than 5 hours.

E4. ENCLOSURE 4

CERTIFICATION PROCEDURES

E4.1.1. These procedures shall be followed for DoD certification of each model of Type-I, Type-II, and Type-III MSD. (See DoT, USCG Directives, reference (d), for detailed procedures).

E4.1.1.1. SELECTION OF MSD

E4.1.1.1.1. In response to a Government request for proposal, each manufacturer shall submit a technical description of the MSD to the using DoD Component or Components for review. This information shall include the following:

E4.1.1.1.1.1. System concept and schematics.

E4.1.1.1.1.2. Design capacity.

E4.1.1.1.1.3. Weight and physical dimensions.

E4.1.1.1.1.4. Components and construction materials.

E4.1.1.1.1.5. Materials and chemicals required for operation.

E4.1.1.1.1.6. Power requirements.

E4.1.1.1.1.7. Performance data and record of the device.

E4.1.1.1.1.8. Drawings, technical manuals, reliability and maintainability test plan, failure modes and effects analysis, and maintenance and engineering analysis.

E4.1.1.1.2. The manufacturer shall bear the expense of all testing and evaluation, using an EPA-certified laboratory, before presenting the data to the Department of Defense.

E4.1.1.2. LABORATORY EVALUATION

E4.1.1.2.1. After a satisfactory DoD Component (or U.S. Coast Guard) technical review of the device, the manufacturer shall be required to furnish one of the devices to a DoD-designated laboratory for a technical evaluation to verify that it

meets the following requirements:

E4.1.1.2.1.1. Performance Criteria. For Type-I and Type-II MSDs, fecal coliform bacteria, visible floating solids, and suspended solids, using the methods contained in reference (d).

E4.1.1.2.1.2. Reliability and maintainability requirements (see section E3.1.1.2., enclosure 3).

E4.1.1.2.1.3. EPA air pollution requirements for incinerators, if applicable.

E4.1.1.2.1.4. Safety requirements.

E4.1.1.2.1.5. Component medical requirements.

E4.1.1.2.1.6. All design and construction requirements in section E3.1.1.1. of enclosure 3. The DoD-designated laboratory shall submit a report on the test and evaluation for review before onboard vessel evaluation.

E4.1.1.2.2. The manufacturer shall bear the expense of all testing and evaluation, using an EPA-certified laboratory, before presenting the data to the Department of Defense.

E4.1.1.3. VESSEL EVALUATION

E4.1.1.3.1. Should the MSD pass all the laboratory requirements in section E4.1.1.2., above, it then shall be installed in a vessel for operational evaluation similar to that described for the laboratory evaluation. In the case of flow-through devices (Types I and II), the influent must contain fecal matter, and samples shall be collected for 10 consecutive flushes per day (including weekends) at the peak morning period for a duration of 10 days. A certified laboratory shall analyze the samples for fecal coliforms and visible floating solids to determine whether the MSD complies with EPA standards. All testing methodology shall be in accordance with DoT, USCG Directives, and the Standard Methods for the Examination of Water and Wastewaters (references (d) and (g)). The MSD shall be loaded to its design capacity with sewage and shall be operated according to the manufacturer's manual of instructions. The final report shall determine whether the device is suitable for certification by the DoD Component concerned.